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SOURCE Sel'khozmaashina, No 1, 1951.NEW USSR HEMP THRESHERS

S. S. Volovik

The process of hemp threshing is characterized by high labor consumption and takes as much time as the threshing of grain crops, the harvesting of root plants, fall sowing, and other agricultural tasks. Lacking the means of mechanization, the threshing stretches out for 30 days and more, which leads to a loss of seed and makes it impossible to wet the stalks during the same season.

The threshing and separating elements of grain threshers and other threshers cannot be used for the threshing of hemp because the fiber layer of the stalks must be preserved from mechanical damage in the threshing process.

In 1929, the agriculturist Titov proposed the construction of a simple hemp thresher, which was put into production. Its working element was a cylindrical drum with rigid, cylindrical steel pins, 100-180 millimeters high and 12 millimeters in diameter, attached to its surface in a staggered arrangement. The work done by this thresher was of low quality. Damage to the stalks reached 45 percent, the waste of stalks due to tangling reached 8 percent and the remaining seed in the torn-off stalk heads (requiring hand threshing) reached 40 percent. Titov's thresher was, therefore, out of production.

Simple and complex threshers constructed in the prewar period by VNIKO (All-Union Scientific Research Institute for Hemp) and complex threshers designed by VISKhom (All-Union Institute of Agricultural-Machine Building) were not used because of unsatisfactory technical and operating characteristics, and because of faulty design of the threshing elements.

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- 1 -

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The semicomplex hemp thresher constructed by VISKhOM, and put into production in 1947, was withdrawn in 1949, chiefly because of the low wear resistance of the working parts.

In 1946, the All-Union Scientific Research Institute for Fibrous Crops designed a centrifugal threshing machine. It consists of two drums rotating in opposite directions, placed one above the other. Steel pins 10 millimeters in diameter and 125 millimeters high are fastened, swivel fashion, to the surface of each drum. Each drum has eight rows of pins, eight pins to a row, arranged in staggered order.

The pins can move in the plane perpendicular to the axis of revolution, and to either side of it, while in operation. This method of attaching the pins assures a high-quality yield of seed and reduces damage to the stalks.

Laboratory tests conducted in 1946 established the fact that centrifugal threshing machines are suitable for threshing hemp with a high degree of moisture.

In threshing Central Russian (srednerusskoy) hemp, whose blossoms have a 41.5-percent moisture content, the following agrotechnical indexes were obtained:

<u>Condition</u>	<u>Percent</u>
Remainder of seed in sheaves	0.4
Remainder of seed in torn-off heads	2.7
Damaged seed	1.0
Damaged stalks	14.0
Waste of stalks through tangling	3.8

Subsequent tests in 1947 confirmed the suitability of centrifugal machines for threshing all varieties of hemp with a moisture content up to 40 percent. Once the centrifugal threshing devices had produced satisfactory agrotechnical indexes and durability of design, simple and complex threshers based on them were built.

The simple thresher is intended for processing all varieties of hemp in sheaves. The thresher separates the seeds and blossoms from the sheaves for subsequent cleaning of the seeds by simple grain-cleaning machines (shoes, dressers).

The complex thresher separates the seed and blossoms from the sheaves, rethreshers torn-off heads containing seeds, and cleans the seeds of chaff and other impurities, that is, completes the threshing process.

Both threshers are hand fed. After the testing of experimental models, both threshers were recommended for series production in 1948; and in 1949, the Bezhetsk'sel'mash (Bezhetsk Agricultural Machinery) Plant started series production of the simple hemp thresher MK-1.5 and the complex hemp thresher MKS-1.5.

In check tests conducted by the Ukrainian State Machine-Testing Station, the following performance indexes were obtained in the threshing of Central Russian hemp:

<u>Performance Indexes</u>	<u>Simple MK-1.5 Thresher</u>	<u>Complex MKS-1.5 Thresher</u>
Remainder of seed in sheaves	3.1%	2.3%
Damaged seed	0.9%	1 %
Stalks wasted through tangling	0.4%	2.1%
Remainder of seed in torn-off heads	2.2%	0.9%

- 2 -

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<u>Performance Indexes</u>	<u>Simple MK-1.5 Thresher</u>	<u>Complex MKS-1.5 Thresher</u>
Purity of seed	-	98.6%
Loss of seed by separating devices	-	2.3%
Damaged stalks	9.9%	21.4%
Coefficient of operating dependability	0.98%	0.91%
Productivity (ha in 10 hr)	7.0 %	8.5%
Required driving power (hp)	Team of 3 horses	9 %
Increase in labor productivity (including cleaning of seed), as compared to hand threshing	3.6 times	5.5 times

On the basis of check tests conducted under collective farm conditions in 1949, the Bezhetsk Plant carried out a number of improvements during 1950 to raise the production and agrotechnical indexes of the threshers.

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- 3 -

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